Allied Telesyn

RAPIER G6 SERIES

Managed Layer 3 Gigabit Ethernet Switches

AT-RPG6-xx
6 port 100/1000T Layer 3 switch
2 x Gigabit uplink bays

AT-RPG6FSX/SC-xx
6 port 1000SX (SC) Layer 3 switch
2 x Gigabit uplink bays

AT-RPG6FSX/MT-xx
6 port 1000SX (MT-RJ) Layer 3 switch
2 Gigabit uplink bays

AT-RPG6FLX/SC-xx
6 port 1000LX (SC) Layer 3 switch
2 x Gigabit uplink bays

Performance

Allied Telesyn's Rapier family of Gigabit Ethernet Layer 3 switches delivers an unprecedented level of integration, feature richness, and switching performance at affordable prices. With wirespeed Layer 2 switching and wirespeed Layer 3 IP routing on all ports, these switches are designed for high performance workstation connectivity, power workgroups, and server farm aggregation or back-bone applications.

Flexibility and Scalability

All Rapier Layer 3 switches feature two optional uplink slots that can be individually configured with either a 1000BaseSX, 1000BaseLX, or 1000BaseT interface module. This flexibility provides high-speed connectivity in wiring closets, server farms, or campuses with fiber or copper cabling. Additionally, all Gigabit ports can be configured as port trunks for greater bandwidth and load sharing.

Rich Feature Set

All Rapier Layer 3 switches include a suite of advanced Layer 2 switching features such as IEEE 802.1Q VLAN tagging, 802.1p traffic prioritization, and IGMP snooping to optimize network performance. The switches include Layer 3 IP Static Routing, RIP, RIPv2, VRRP, and OSPFv2 dynamic routing protocols. The optional full Layer 3 software upgrade provides a set of additional routing protocols, such as IPX, AppleTalk, DVMRP, PIM-DM/SM, and RSVP for more advanced networking applications.

Redundancy

The Rapier family of Layer 3 switches provides redundant operation with an optional Redundant Power Supply (RPS). If the internal power supply fails, the external RPS provides power to the switch. Also, Port Trunking and the Spanning Tree Protocol provide redundant links for failure protection. OSPF and VRRP routing protocols support redundant routes as well.

Management

Although the Rapier family of Layer 3 switches is easy to install and configure, an extensive range of management support is provided. Switch management support includes Web-browser, SNMP, RMON, Telnet, and a Command Line Interface, controlling switches via a variety of mechanisms.

About Allied Telesyn

Allied Telesyn was founded in 1987 and now has offices around the globe, more than 2,800 employees and over $500M of worldwide annual revenue. The attributes which have led Allied Telesyn to achieve its leading position in the enterprise, operator and connectivity business segments can be summarised by four key elements: its business focus on networking technology for professional markets, where Allied Telesyn has proved to be the only company capable of providing a total end-to-end solution at a high price/performance ratio; the ability to handle every aspect of its own products from design to marketing; the development of components and solutions which accommodate flexible, efficient and reliable network construction; and support from sound warranty terms and quality services. Allied Telesyn connects the IP world efficiently thanks to affordable and highly reliable network solutions. For more information see: www.alliedtelesyn.com

Key Features

- Non-blocking Layer 2/3 performance
- 35Gbps switch fabric
- 2 bays for optional 1Gbps uplinks
- High performance 200MHz RISC-based processor
- Non-blocking Layer 2 switching performance
- Very low latency (3ms)
- IEEE 802.1QVLAN tagging
- IEEE 802.1p CoS (4 priority queues)
- IP RIPv1/v2, OSPF
- VRRP
- RADIUS authentication
- Console, Telnet, Web-browser, SNMP and RMON management
- Stateful Inspection Firewall option
- SSH 2.0 option
- Universal 100-240V AC, 50/60Hz power supply
- 48V DC power supply available (factory installed)
- Redundant power supply support
- 19" rackmountable chassis
- AppleTalk, IPX routing option
- DVMRP Multicast option
- PIM-DM/SM Multicast option

Service and Support

Allied Telesyn provides value-added support services for its customers under its Net.Cover℠ programs. For more information on Net.Cover℠ support programs available in your area, contact your Allied Telesyn sales representative or visit our website: www.alliedtelesyn.com

Feature Summary

	G6	G6f
Hardware (Standard)		
100/1000T (RJ-45)	6	-
1000BaseSX or LX (SC)	-	6
Gigabit uplink slots	2	2
Hardware (Options)		
1000BaseSX (SC) uplink module	Y	Y
1000BaseLX (SC) uplink module	Y	Y
100/1000BaseT (RJ-45) uplink module	Y	Y
48V DC power supply (option)	Y	Y
External Redundant Power Supply (RPS)	Y	Y
Layer 2 Switching		
L2 Wire-speed switching	Y	Y
Switch fabric bandwidth	35Gbps	35Gbps
Forwarding/filtering/route rate	11.9Mpps	11.9Mpps
IEEE 802.1D Spanning Tree	Y	Y
IEEE 802.1Q VLAN Tagging	Y	Y
IEEE 802.1p	Y	Y
QoS Priority Queues (egress)	4	4
IGMP Snooping	Y	Y
Port Trunking	Y	Y
Management		
Port Mirroring	Y	Y
Port Security	Y	Y
Telnet CLI	Y	Y
Web-browser	Y	Y
SNMP	Y	Y
RMON (1-3, 9)	Y	Y
Basic Layer 3		
L3 IP Wire-speed routing	Y	Y
IP TOS QoS	Y	Y
IP Static Routes	Y	Y
IP RIP, RIPv2	Y	Y
OSPFv23, VRRP	Y	Y
Full Layer 3		
IPX RIP routing (software)	Y	Y
AppleTalk routing (software)	Y	Y
PIM-DM Multicast	Y	Y
RSVP QoS	Y	Y
DVMRP Multicast	Y	Y

Status Indicators

System LEDs:

Power	Green On
Fault	Red On
RPS	Green On

Per Port LEDs:

Link/Activity

1000Mbps Link	Green On
1000Mbps Activity	Green Flashing
100Mbps Link	Amber On
100Mbps Activity	Amber Flashing

Duplex/Collision

Full Duplex	Green On
Half Duplex	Amber On
Collision	Amber Flashing

Network Management

RS232 Console CLI
Telnet CLI
Web-browser support (HTTP)
SNMP
RMON (1-3, 9 groups)
MIB II (RFC 1213)
802.3 MAU MIB (RFC 2239)
Ethernet MIB (RFC 1643)
Bridge MIB (RFC 1493)
Extended Interface MIB (RFC 1573)
RIPv2 MIB (RFC 1724)
Proprietary MIB Extensions

Operational Characteristics

Rapier G6

35Gbps non-blocking bandwidth
11.9Mbps route/filter/forward

Rapier G6F SX or LX

35Gbps non-blocking bandwidth
11.9Mbps route/filter/forward

Forward/filtering rates:

	148,880pps for Fast Ethernet/port
	1,488,000pps for Gigabit Ethernet/port
Layer 2 addresses (MAC):	8k
VLANs (802.1Q):	63
Switching mode:	Store and forward
Buffer memory:	4Mb global
Layer 3 IP address:	2k
Next router hops:	16
Priority Queues:	4

Interface Connections

1000SX Multi-mode fiber (SC or MT-RJ) connector
1000LX Single-mode fiber SC connector
100/1000T Shielded RJ-45 connector

Power Characteristics

AC: (-10, -20, -30, -40, -50 models)

Voltage:	100-120/200-240V AC
Frequency:	50/60Hz
Power consumption:	95W max.

DC: (-80 models)

Input voltage	48V DC
Power consumption:	95W max.
Output voltage:	3.3V DC, 13A 5V DC, 8A 12V DC, 1A

Environmental Characteristics

Operating Temp:	0°C to 40°C (32°F to 104°F)
Non-operating Temp:	-25°C to 70°C (-13°F to 158°F)
Relative Humidity:	95% max. non-condensing

Physical Characteristics

Dimensions (W/D/H):	440mm x 356mm x 66mm (17.3" x 14" x 2.6"), 1.5RU
Weight:	5.5kg (12lbs) Packaged
Mounting:	19" rackmount, hardware included

Electrical/Mechanical Approvals

UL 1950 3rd edition, CSA 22.2 No. 950, EN60950 (TUV), VCCI Class I, FCC Part 15 Class A, EN550022 Class A, EN50082-1

Standards and Protocols

Software Release 2.7.3

BGP-4

RFC 1771 Border Gateway Protocol 4
RFC 1997 BGP Communities Attribute
RFC 1998 Multi-home Routing
RFC 3065 Autonomous System Confederations for BGP
RFC 2842 Capabilities Advertisement with BGP-4
RFC 2858 Multiprotocol Extensions for BGP-4
RFC 2918 Route Refresh Capability for BGP-4
RFC 2439 BGP Route Flap Damping
RFC 2385 Protection of BGP Sessions via the TCP MD5 Signature Option

Encryption

RFC 2104 HMAC
RFC 2451 The ESP CBC-Mode Cipher Algorithms
FIPS 180 SHA-1
FIPS 186 RSA
FIPS 46-3 DES
FIPS 46-3 3DES

Ethernet

RFC 894 Ethernet II Encapsulation
IEEE 802.1D MAC Bridges
IEEE 802.1Q Virtual LANs
IEEE 802.2 Logical Link Control
IEEE 802.3ab 1000BASE-T
IEEE 802.3ac VLAN TAG
IEEE 802.3ad (LACP) Link Aggregation
IEEE 802.3u 100BASE-T
IEEE 802.3x Full Duplex Operation
IEEE 802.3z Gigabit Ethernet

Frame Relay

RFC 1490, 2427 Multiprotocol Interconnect over Frame Relay
ANSI T1S1 Frame relay

General Routing

RFC 768 UDP
RFC 791 IP
RFC 792 ICMP
RFC 1256 ICMP Router Discovery Messages
RFC 793 TCP
RFC 2822 Internet Message Format

RFC 826 ARP
RFC 903 Reverse ARP
RFC 950 Subnetting, ICMP
RFC 1812 Router Requirements
RFC 1027 Proxy ARP
RFC 1055 SLIP
RFC 1122 Internet Host Requirements
RFC 1144 Van Jacobson's Compression
RFC 1288 Finger
RFC 2390 Inverse Address Resolution Protocol
RFC 2131 DHCP
RFC 1542 BootP
RFC 2132 DHCP Options and BOOTP Vendor Extensions.
RFC 1582 RIP on Demand Circuits
RFC 1918 IP Addressing
RFC 1701 GRE
RFC 1702 GRE over IPv4
RFC 3232 Assigned Numbers
RFC 1332 The PPP Internet Protocol Control Protocol (IPCP)
RFC 1378 The PPP AppleTalk Control Protocol (ATCP)
RFC 1570 PPP LCP Extensions
RFC 1661 The Point-to-Point Protocol (PPP)
RFC 1552 The PPP Internetworking Packet Exchange Control Protocol (IPXCP)
RFC 1762 The PPP DECnet Phase IV Control Protocol (DNCP)
RFC 1877 PPP Internet Protocol Control Protocol Extensions for Name Server Addresses
RFC 1962 The PPP Compression Control Protocol (CCP)
RFC 1968 The PPP Encryption Control Protocol (ECP)
RFC 1974 PPP Stac LZS Compression Protocol
RFC 1978 PPP Predictor Compression Protocol
RFC 1990 The PPP Multilink Protocol (MP)
RFC 2125 The PPP Bandwidth Allocation Protocol (BAP) / The PPP Bandwidth Allocation Control Protocol (BACP)
RFC 2516 A Method for Transmitting PPP Over Ethernet (PPPoE)
RFC 2878 PPP Bridging Control Protocol (BCP)
RFC 2661 L2TP
"IPX Router Specification", v1.2, Novell, Inc., Part Number 107-000029-001
AppleTalk

General Routing and Firewall

RFC 3022 Traditional NAT
draft-ietf-ipsec-nat-t-ike-08.txt Negotiation of NAT-Traversal in the IKE
draft-ietf-ipsec-udp-encaps-08.txt UDP Encapsulation of IPsec Packets

IP Multicasting

RFC 1075 DVMRP
RFC 1112 Host Extensions
RFC 1812 Router Requirements
RFC 2236 IGMPv2
RFC 2362 PIM-SM
RFC 2715 Interoperability Rules for Multicast Routing Protocols
RFC 3973 PIM-DM
draft-ietf-pim-dm-new-v2-04 PIM-DM
draft-ietf-pim-sm-v2-new-09 PIM-SM

IPsec

RFC 1829 IPsec algorithm
RFC 3173 IPComp - IPsec compression
RFC 2395 IPsec Compression - LZS
RFC 1828 IP Authentication using Keyed MD5
RFC 2401 Security Architecture for IP
RFC 2402 AH - IP Authentication Header
RFC 2403 IPsec Authentication - MD5
RFC 2404 IPsec Authentication - SHA-1
RFC 2405 IPsec Encryption - DES
RFC 2406 ESP - IPsec encryption
RFC 2407 IPsec DOI
RFC 2408 ISAKMP
RFC 2409 IKE
RFC 2410 IPsec encryption - NULL
RFC 2411 IP Security Document Roadmap
RFC 2412 OAKLEY

IPv6

RFC 3596 DNS Extensions to support IPv6
RFC 1981 Path MTU Discovery for IPv6
RFC 2080 RIPng for IPv6
RFC 3513 IPv6 Addressing Architecture
RFC 2375 IPv6 Multicast Address Assignments
RFC 2460 IPv6
RFC 2461 Neighbour Discovery for IPv6
RFC 2462 IPv6 Stateless Address Autoconfiguration
RFC 2463 ICMPv6
RFC 2464 Transmission of IPv6 Packets over Ethernet Networks
RFC 2472 IPv6 over PPP
RFC 2526 Reserved IPv6 Subnet Anycast Addresses
RFC 3484 Default Address Selection for IPv6
RFC 2710 Multicast Listener Discovery (MLD) for IPv6
RFC 3810 Multicast Listener Discovery Version 2 (MLDv2) for IPv6
RFC 2711 IPv6 Router Alert Option
RFC 2529 Transmission of IPv6 over IPv4 Domains without Explicit Tunnels
RFC 2893 Transition Mechanisms for IPv6 Hosts and Routers
RFC 3056 Connection of IPv6 Domains via IPv4 Clouds
RFC 3315 DHCPv6
Configuration Protocol for IPv6 (DHCPv6)
RFC 3587 IPv6 Global Unicast Address Format
RFC 3633 IPv6 Prefix Options for Dynamic Host Configuration Protocol
RFC 3646 DNS Configuration options for Dynamic Host Configuration Protocol for IPv6 (DHCPv6)
RFC 3306 Supported IPv6 standards
RFC 2766 NAT-PT
draft-ietf-ngtrans-hometun-01 IPv6 over IPv4 tunnels for home to Internet access
draft-ietf-ngtrans-introduction-to-ipv6-transition-06 An overview of the introduction of IPv6 in the Internet

Configuration Protocol

RFC 2365 Administratively Scoped IP Multicast
RFC 3307 Allocation Guidelines for IPv6 Multicast Addresses

Management

RFC 1155 MIB
RFC 1157 SNMP
RFC 1212 Concise MIB definitions
RFC 1213 MIB-II
RFC 1643 Ethernet MIB
RFC 1493 Bridge MIB
RFC 2790 Host MIB
RFC 1515 Definitions of Managed Objects for IEEE 802.3 MAUs
RFC 1573 Evolution of the Interfaces Group of MIB-II
RFC 1657 Definitions of Managed Objects for BGP-4 using SMIv2
RFC 1757 RMON (groups 1,2,3 and 9)
RFC 2011 SNMPv2 MIB for IP using SMIv2
RFC 2012 SNMPv2 MIB for TCP using SMIv2
RFC 2338 VRRP
RFC 2096 IP Forwarding Table MIB
RFC 2576 Coexistence between V1, V2, and V3 of the Internet-standard Network Management Framework
RFC 2578 Structure of Management Information Version 2 (SMIv2)
RFC 2579 Textual Conventions for SMIv2
RFC 2580 Conformance Statements for SMIv2
RFC 2665 Definitions of Managed Objects for the Ethernet-like Interface Types
RFC 2674 Definitions of Managed Objects for Bridges with Traffic Classes, Multicast Filtering and Virtual LAN Extensions (VLAN)
RFC 2856 Textual Conventions for Additional High Capacity Data Types
RFC 3164 Syslog Protocol
RFC 3410 Introduction and Applicability Statements for Internet-Standard Management Framework
RFC 3411 An Architecture for Describing SNMP Management Frameworks
RFC 3412 Message Processing and Dispatching for the SNMP
RFC 3413 SNMP Applications
RFC 3414 User-based Security Model (USM) for SNMPv3
RFC 3415 View-based Access Control Model (VACM) for the SNMP
RFC 3416 Version 2 of the Protocol Operations for SNMP
RFC 3417 Transport Mappings for the SNMP
RFC 3418 MIB for SNMP
draft-ietf-bridge-8021x-00.txt Port Access Control MIB
RFC 3289 Management Information Base for the Differentiated Services Architecture

OSPF

RFC 1245 OSPF protocol analysis
RFC 1246 Experience with the OSPF protocol
RFC 2328 OSPFv2
RFC 1586 OSPF over Frame Relay
RFC 1793 Extending OSPF to Support Demand Circuits
RFC 1587 The OSPF NSSA Option

QoS

RFC 1349 Type of Service in the IP Suite
RFC 2205 Reservation Protocol
RFC 2211 Controlled-Load
RFC 2475 An Architecture for Differentiated Services
IEEE 802.1p Priority Tagging
RFC 2697 A Single Rate Three Color Marker
RFC 2698 A Two Rate Three Color Marker
RFC 2597 Assured Forwarding PHB Group
RFC 3246 An Expedited Forwarding PHB (Per-Hop Behavior)

RIP

RFC 1058 RIPv1
RFC 1723 RIPv2

Security

RFC 959 FTP
RFC 1413 IDP
RFC 1492 TACACS
RFC 1779 X.500 String Representation of Distinguished Names.
RFC 1858 Fragmentation
RFC 2865 RADIUS
RFC 2866 RADIUS Accounting
RFC 2459 X.509 Certificate and CRL profile
RFC 2510 PKI X.509 Certificate Management Protocols
RFC 2511 X.509 Certificate Request Message Format
RFC 2559 PKI X.509 LDAPv2
RFC 2585 PKI X.509 Operational Protocols
RFC 2587 PKI X.509 LDAPv2 Schema
draft-grant-tacacs-02.txt TACACS+
Draft-IETF-PKIX-CMP-Transport-Protocols-01 Transport Protocols for CMP
draft-ylonen-ssh-protocol-00.txt SSH Remote Login Protocol
IEEE 802.1x Port Based Network Access Control
PKCS #10 Certificate Request Syntax Standard

Services

RFC 2821 SMTP
RFC 854 Telnet Protocol Specification
RFC 855 Telnet Option Specifications
RFC 856 Telnet Binary Transmission
RFC 857 Telnet Echo Option

RFC 858 Telnet Suppress Go Ahead Option
RFC 2217 Telnet Com Port Control Option
RFC 932 Subnetwork addressing scheme
RFC 1305 NTPv3
RFC 1091 Telnet terminal-type option
RFC 1179 Line printer daemon protocol
RFC 1350 TFTP
RFC 1510 Network Authentication
RFC 2049 MIME
RFC 1985 SMTP Service Extension
RFC 2156 MIXER
RFC 1945 HTTP/1.0

SSL
RFC 2246 The TLS Protocol Version 1.0
draft-freier-ssl-version3-02.txt SSLv3

STP / RSTP
IEEE 802.1Q - 2003 MSTP (802.1s)
IEEE 802.1t - 2001 802.1D maintenance
IEEE 802.1w - 2001 RSTP

VoIP
RFC 2543 SIP
G.711 A/µ law Pulse code modulation (PCM) of voice frequencies
G.723.1 Dual rate speech coder for multimedia communications transmitting at 5.3 and 6.3 kbit/s
G.729 A/B (Optional) Coding of speech at 8 kbit/s using conjugate-structure algebraic-code-excited linear-prediction (CS-ACELP)
H.323 v2 Packet-based multimedia communications systems

X.25
RFC 1356 Multiprotocol Interconnect on X.25 and ISDN in the Packet Mode
ITU-T Recommendations X.25 (1988), X.121 (1988). X.25

Ordering Information

AT-RPG6-xx
6 port 100/1000T Layer 3 switch
2 x Gigabit uplink bays
Order information: 990-11547-xx

AT-RPG6FSX/SC-xx
6 port 1000SX (SC) Layer 3 switch
2 x Gigabit uplink bays
Order information: 990-11554-xx

AT-RPG6FSX/MT-xx
6 port 1000SX (MT-RJ) Layer 3 switch
2 x Gigabit uplink bays
Order information: 990-11358-xx

AT-RPG6FLX/SC-xx
6 port 1000LX (SC) Layer 3 switch
2 x Gigabit uplink bays
Order information: 990-11555-xx

Where xx = 10 for US power cord
20 for no power cord
30 for UK power cord
40 for Australian power cord
50 for European power cord
80 for 48V DC power supply

Uplink Modules

AT-A35SX/SC
1 x 1000SX (SC) Gigabit fiber
Order information: 990-11343-00

AT-A35LX/SC
1 x 1000LX (SC) Gigabit fiber
Order information: 990-11344-00

AT-A39/T
1 x 10/100/1000T (RJ-45) Gigabit copper
Order information: 990-11345-00

AT-A40/SC
1 x 100FX (SC) multimode fiber
Order information: 990-11920-00

AT-A40/MT
1 x 100FX (MT) multimode fiber
Order information: 990-11921-00

AT-A41/SC
1 x 100FX (SC) singlemode fiber
Order information: 990-11922-00

AT-A41/MT
1 x 100FX (MT) singlemode fiber
Order information: 990-11923-00

AT-A42
1 x Unpopulated GBIC module
Order information: 990-11006-00

GBIC Modules

For use with AT-A42

AT-G8T
1000T GBIC Copper
Order number: 990-97208-00

AT-G9T
1000T GBIC Copper
Order number: 990-11007-00

AT-G8SX-01
500m SX GBIC, based on 50 micron MMF
220m SX GBIC, based on 62.5 micron MMF
Order number: 990-02023-00

AT-G8LX10
10km LX GBIC, based on 9 micron SMF
Order number: 990-11138-00

AT-G8LX25
25km LX GBIC, based on 9 micron SMF
Order number: 990-11643-00

AT-G8LX40
40km LX GBIC, based on 9 micron SMF
Order number: 990-11644-00

AT-G8LX70
70km LX GBIC, based on 9 micron SMF
Order number: 990-11645-00

* The GBICs listed are subject to change at any time without notice.

Redundant Power Supplies

AT-RPS8000-xx
4 slot redundant power supply chassis (includes one power module)
Order number: 990-11126-xx

Where xx = 10 for U.S. power cord
20 for no power cord
30 for U.K. power cord
40 for Asia/Pacific power cord
50 for European power cord

AT-PWR8000
Redundant Power Supply module
Order number: 990-11152-00

Software Upgrade Options

AT-AR-RPFL3UPGRD
Rapier Full Layer 3 Upgrade License
- IPX routing
- Appletalk
- RSVP
- PIM DM
- PIM SM
- DVMRP
- VRRP

Order number: 980-10002-y

AT-AR-RPSecPK
Rapier Security Pack Upgrade
- Firewall
- SMTP Proxy
- HTTP Proxy

Order number: 980-10030-y

Where y = 00 for 1 shot
01 for 1 licence
05 for 5 licenses
10 for 10 licenses
25 for 25 licenses
50 for 50 licenses
100 for 100 licenses
250 for 250 licenses

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